Register Now! CHD's 2nd Annual Conference • Nov. 3-5

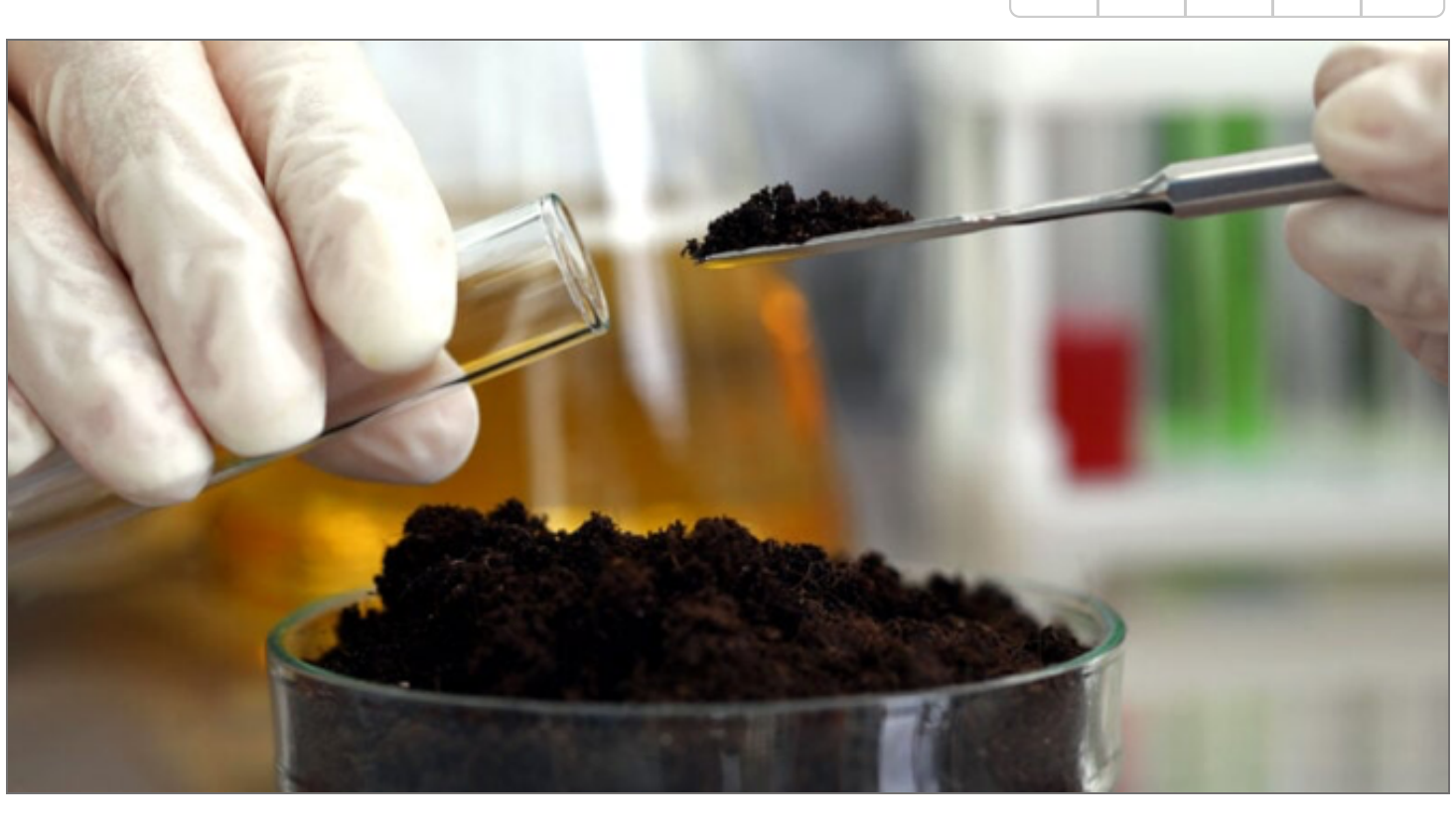
09/01/23 • BIG FOOD • BIG CHEMICAL › NEWS

Genetically Modified Soil Microbes May Have 'Irreversible Consequences' — New Report

A plan by major agrochemical companies to develop genetically engineered soil microbes to act as pesticides and fertilizers is an "open-air genetic experiment that may have irreversible consequences," according to a report published Tuesday by Friends of the Earth.

By **Brenda Baletti, Ph.D.**

23



Miss a day, miss a lot. *Subscribe to The Defender's Top News of the Day.* ***It's free.***

A plan by major agrochemical companies to develop genetically engineered (GE) soil microbes, including bacteria and fungi, to act as pesticides and fertilizers is raising concerns about the unknown and potentially disastrous risks associated with the new organisms, according to a report published Tuesday by Friends of the Earth.

Bayer-Monsanto, Syngenta and BASF are among the chemical giants known to be developing the microbes which, according to the report, are fundamentally different from the already controversial genetically modified organisms (GMOs) that have existed for decades.

GE microbes are living organisms that share their genetic material easily with other species and travel vast distances in the wind. And because they are microscopic, their numbers are vast.

"An application of GE bacteria could release approximately 3 trillion genetically modified organisms every half an acre — that's about how many GE corn plants there are in the entire U.S.," said Dana Perls, food and technology manager at Friends of the Earth, in a press release.

Introducing GE microbes into agriculture represents an "unprecedented open air genetic experiment," the report says. "The scale of release is far larger, and the odds of containment are far smaller than for other GE crops."

Scientists understand the role and function of less than 1 percent of the billions of existing species of microbes or "biologicals."

Yet the race is on by biotech and agrochemical companies to develop, modify and patent new microbes to capture a share of the biologicals market, which is set to triple in value to $29.31 billion by 2029.

At least two GE microbes, Pivot Bio's Proven and BASF's Poncho Votivo seed treatments, are already being used by U.S. farmers on millions of acres of farmland.

RFK Jr./Hooker NEW book: Vax-Unvax. Order Now!

"GMO companies are putting GM microbes into the open environment, yet no one has the first idea of what risks this might present," Claire Robinson, co-director of GMWatch told The Defender. "And there is absolutely no need to take these risks and no proof that the GM microbes actually work in the way that's claimed."

"The latest science shows that engineering organisms can result in unintended genetic mishaps," said Kendra Klein, Ph.D., deputy director for science at Friends of the Earth and author of the report. "And there are rare but potentially disastrous risks of creating an invasive species or novel human pathogen."

Klein added, "The release of GE microbes across millions of acres of farmland is an open-air genetic experiment that may have irreversible consequences. Once they are released, GE microbes cannot be recalled."

The report provides a historical context for understanding the new technology, details a number of future trends and potential concerns and makes urgent policy recommendations for assessing and regulating GE microbes.

Big ag: Regenerative agricultural leaders 'feeding the world'?

In recent years, growing numbers of scientists and farmers have studied the relationship between the microbiome, which is the aggregate of microbes living in the soil, and soil health.

These tiny microorganisms play an outsized role in healthy plant growth, building soil structure, mobilizing nutrients, providing crops with immunity to pests and diseases, and fixing carbon and nitrogen. And they form symbiotic relationships with other species, like plants.

With that knowledge, regenerative agriculture has emerged as a movement focused on improving soil health, plant health and ecosystem health to counter the damage done by industrial agriculture and build a more resilient system.

Regenerative farmer Gail Fuller explained the philosophy behind his farming practices. For thousands of years, Fuller said, "plants, animals and microbes lived in harmony," but people disrupted that dynamic.

Fuller told The Defender:

> "We have spent the last few thousand years trying to conquer, kill and control, all in the name of 'feeding the masses.' We have eroded away much of our topsoil and killed off many of the species that we thought were unimportant.
>
> "Somewhere along the way, some farmers began to realize we had gone too far and started looking for a better way. We learned how to plant without tillage. We realized the soil was alive with microbes and we began to study and understand them. We saw what Mother Nature has been trying to show us all along. The beauty of life.
>
> "Once we learn to quit conquering and work with nature we see life return in full force and the nutritional value of the food we grow, which has been declining for decades, begins to climb.
>
> "When we learn to focus on life and we start working with the system (diversity of crops, cover crops, livestock, etc.) microbes and wildlife return. We can easily grow enough food without synthetic fertilizers, chemicals, GMO crops and microbes."

As regenerative farmers like Fuller look to the microbiome to develop new forms of sustainable agriculture and recuperate key dynamic relationships in nature, other actors have recognized their potential to deliver big profits.

Order Now 'The Wuhan Cover-up' by RFK Jr.!

Billionaire investors like Bill Gates are funding biotech research at Big Ag companies including Bayer-Monsanto's Ginko Bioworks and Pivot, which are working "to design biology — design microbes, design plants — to be able to do what we want."

A series of articles in Nature argued that given the interconnected nature of soil, plant and human microbiomes, soil microbes must be governed under One Health — the World Health Organization's vague biosecurity project that critics say aims to surveil and control all aspects of life.

That's because microbes underpin global food and water security, but also because "soil is a reservoir of microbial hazards," One Health advocates argue.

The natural microbes that play critical roles in the microbiome can be isolated, formulated and developed as fertilizers, which can be a critical tool for farmers, but also opens the door to patenting and engineering.

Hundreds of naturally derived microbes are already sold to farmers and billions of naturally occurring microbes are yet unexplored, according to the report, raising the question of why corporations need to genetically engineer them at all.

In the last several years, five major agrochemical companies, Syngenta (ChemChina), BASF, Bayer-Monsanto, FMC Corp and Corteva (DowDuPont) have acquired most existing biologicals companies.

These are the same corporations that controlled the creation and distribution of GE crops in the past.

They have "a long track record," the report says, of disregarding the environmental and health impacts of their products, systematically undermining small farmers, obstructing the regulatory process and hiding the truth about their products.

Fuller warned, "When we decided we could help the system by genetically modifying crops it led almost instantly to resistant weeds as Mother Nature fought back. The same will happen with genetically modified microbes. We don't need genetically modified anything. What we need is an understanding of the system."

In marketing microbes, the companies are appropriating the "regenerative agriculture" label, claiming to be leaders in the movement.

But they sell their microbes as part of "integrated platforms," which means farmers seeking microbes must also purchase the companies' engineered seeds, pesticides and other proprietary products that are known to damage soil, contrary to the principles of regeneration that farmers like Fuller promote.

The companies are also invoking "debunked tropes" about needing to increase yields to "feed the world," the report says.

Fuller said farmers have been told for years they need to increase yields to "feed the world," but:

> "This is nothing more than industry BS to sell farmers products they don't need. We have long been growing enough to feed the world and if we double production this year much of the world will still go hungry.
>
> "Hunger is a result of politics and logistics, not production. We will never be able to feed the world until we quit feeding industries' pockets and learn to grow food in systems designed to live instead of systems designed to kill."

What could possibly go wrong?

The report also warns of "knowledge gaps" — scientists and farmers are only beginning to understand the diverse ecological roles microbes play.

The latest science shows that genetic engineering, including new gene-editing technologies like CRISPR, has been shown to produce unintended genetic mistakes, such as accidental gene insertions and deletions when engineering living organisms.

Pivot Bio's patent application for its GE microbe Proven, marketed as a nitrogen fertilizer, lists 29 different genes along with many proteins and enzymes that can be manipulated to "disrupt" and "short circuit" the microbe's ability to sense nitrogen levels in its environment and "trick" it into overproducing nitrogen.

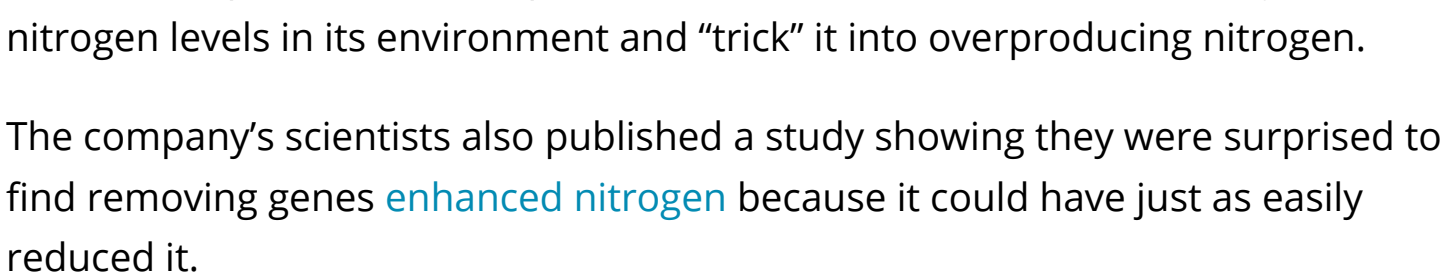
The company's scientists also published a study showing they were surprised to find removing genes enhanced nitrogen because it could have just as easily reduced it.

"That we tinker with genetic regulatory processes does not mean we understand the complexity of the system," Klein wrote in a Food Tank op-ed.

Pivot launched Proven in 2019. The company, backed by major biotech investors including the Bill & Melinda Gates Foundation, raised more than $600 million in private equity based on its promise to "disrupt" agriculture by reducing the need for synthetic nitrogen, replacing it with "clean nitrogen" from GE microbes.

But its own scientific studies showed no reduction in nitrogen use by farmers when the GE microbe is applied, the report says.

BASF's Poncho Votivo 2.0 seed treatment includes a GM BT bacteria and also contains an insecticide known to cause serious harm to soil organisms, pollinators and aquatic ecosystems.



Your support helps fund this work, and CHD's related advocacy, education, and scientific research.
DONATE NOW

The "knowledge gap" around microbes means the risks are almost incalculable, critics say.

The wide geographic distribution of GE microbes, according to the report, could change interspecies genetic relationships with weeds and pests, on a scale orders of magnitude larger than with current GE crops, "with unforeseen and potentially irreparable consequences."

For example, if a new microbial treatment becomes permanently established as an invasive species in the wild, it could influence other species' relationships or even the structure of the whole ecosystem.

Soil microbes could also become human or animal pathogens, and with the potential to come into contact with consumers via the food supply, "it raises potential concerns for impacts on the human biome" as well, the report said.

A confusing and opaque regulatory framework

These microbes are being commercialized through a confusing, opaque and antiquated regulatory system, the report says. The U.S. Department of Agriculture and the U.S. Environmental Protection Agency (EPA) respectively have jurisdiction over different types of microbes, and neither has developed regulations specific to the unique nature of GE microbes.

The EPA says on its website that it has eight GE microbes registered, but there is no publicly available information on what they are, or whether they are currently on the market.

Investigators can't find such information, because companies can redact most details about their products from their regulatory filings claiming it is "confidential business information," the authors wrote.

Once these products are released into the environment, there is no required post-market surveillance or safety testing.

That means the existing regulatory system is set to easily and rapidly greenlight an unknown number of new GE microbes the agrochemical industry is developing with no thorough evaluation of the unique risks they may pose to human and environmental health.

Friends of the Earth is calling for a new regulatory framework adequate to the specific nature of these new organisms. For that, the agencies would have to recognize GE microbes as "novel" and require independent review and assessment of potential health and environmental risks.

They also say the organisms should be regulated by precautionary principle and careful oversight, and that there must be more transparency.

Subscribe to The Defender – It's Free!
First Name.. Last Name.. Email.. SIGN UP

SUGGEST A CORRECTION

Brenda Baletti, Ph.D.
Brenda Baletti Ph.D. is a reporter for The Defender. She wrote and taught about capitalism and politics for 10 years in the writing program at Duke University. She holds a Ph.D. in human geography from the University of North Carolina at Chapel Hill and a master's from the University of Texas at Austin.

Sign up for free news and updates from Children's Health Defense. CHD focuses on legal strategies to defend the health of our children and obtain justice for those injured. We can't do it without your support

Republishing Guidelines

Children's Health Defense Comment Policy
We welcome relevant and respectful comments. Off-topic comments may be removed.
Please read our Comment Policy before commenting.
Got it

23 Comments 1 Login ▾

G Join the discussion…

LOG IN WITH OR SIGN UP WITH DISQUS ?
Name

♡ 1 • Share Best Newest Oldest

Judith Spears
3 days ago edited
i really don't understand how ANY of these characters are getting away with eco terrorism. where do they live? in some atmosphere immune to their IDIOTIC ideas? didn't we used to put these kinds of people in time outs solitary confinement life sentences detention under guillotines the gallows gulags pogroms?
wouldn't anyone of the above situations be the best places where eco terrorists could be warehoused?
5 0 Reply • Share ›

> **MultiChubby1** → Judith Spears
> 3 days ago
> Yes.
> 1 0 Reply • Share ›

Gary Brown
3 days ago edited
I will pass on the mad science of food, and go with real food that has worked for thousands of years. I will go this route myself and pass on everything else. Why I own non GMO seeds!

Sustainability powered by science

IMPROVING NUTRIENT USE EFFICIENCY THROUGH BIOCHEMISTRY

Nitrogen and phosphorus are two nutrients essential to plant health. Although these nutrients exist in the soil and atmosphere, they are often found in a form that is unusable to plants. Our research has discovered a way to provide more of these nutrients to the plant by harnessing the power of the microbes that already exist in the field.

https://foe.org/news/ge-soi...

see more
4 0 Reply • Share ›

> **Raphael** → Gary Brown
> 3 days ago
> Unfortunately, these microbes will not remain confined in one place, they will spread, and the greedy technocrats and mad scientists will smile, saying, as they did about GMO's, "the cat is out of the bag and we can't put it back in".
> Stupidity and greed are deadly combinations.
> 2 0 Reply • Share ›
>
> > **brbg** → Raphael
> > 2 days ago
> > It's not stupidity. It is the globalist plan for Agenda 30 to control the world's food supply.
> > 1 0 Reply • Share ›
> >
> > **Gary Brown** → Raphael
> > 3 days ago
> > Right on Raphael.
> > 0 0 Reply • Share ›

Raphael
3 days ago edited
This is a symptom of the infinite arrogance of civilization itself, the idea that nature can be replaced or forever improved with technology, an idea which very few people understand to be the original departure from not just wisdom but sanity.
The final, logical outcomes of this insanity will be transhumanism and posthumanism, as well as the total destruction of the planet.
Now, if you actually think this is off-topic, you are obviously missing the bigger picture, as do most people, which is why we are where we are today.
2 0 Reply • Share ›

> **MultiChubby1** → Raphael
> 3 days ago
> The Scripture commands us to be content. Would fix alot.
> 2 0 Reply • Share ›
>
> > **Raphael** → MultiChubby1
> > 3 days ago
> > True...but the restless neurotic can never be content and satisfied with anything.
> > 0 0 Reply • Share ›

Barton and Lucinda Bedwell
3 days ago
This makes me suspicious that it has already been secretly happening which might explain the stories of flesh-eating bacteria killing people after they've been exposed to dirt in some areas of t he country. I understand that it comes from soil.
3 1 Reply • Share ›

> **tag** → Barton and Lucinda Bedwell
> 3 days ago
> Well I should be dead then. Nothing I like better than digging in the soil and feel the life located in healthy soil. I guess the difference between healthy soil and GMO/pesticide/herbicide poison dirt must be the difference? I wouldn't put my bare skin in that DIRT garbage either. There is soil and there is dirt. Take a drive in the country and look around. All that farmland you see is DIRT, devoid of life. There is a difference. 90% of your food comes from that dirt. Might be time to find other sources for food that comes from soil. Get to know your food, where it comes from and how it is raised.
> 2 0 Reply • Share ›

SYakoban
2 days ago
When did less than 1 percent of knowledge of anything turn out well?
1 0 Reply • Share ›

MultiChubby1
3 days ago
"And there are rare but potentially disastrous risks of creating an invasive species or novel human pathogen." Here we go.
1 0 Reply • Share ›

Susan
3 days ago
OMG! I wish Bill Gates and Big Ag would stop messing with Mother Nature! If we don't stop this, EVERYTHING will be genetically modified in the future. It's sickening what they're doing without even thinking of the long-term consequences of their actions!
1 0 Reply • Share ›

YouKiddinMe
3 days ago
Very interesting article, thank you, Brenda.
1 0 Reply • Share ›

General Question
a day ago
Here in the State of Monsanto (Missouri) we need a party that won't take the Mad scientist donations. They bought both Wings here.
0 0 Reply • Share ›

kaoshispano
2 days ago
ALL this of TRANSGENICs, since the 90S and the english engineer WHO MADE, like a niew OPPENHEIMER, (canceled by the agroLOBBY and nothing can be found in the web today....), is luciferian absolutly... signs and acts we are near the ENDing.
0 0 Reply • Share ›

brbg
2 days ago
Part of the globalist plan to fully control the food supply and therefore control the people.
0 0 Reply • Share ›

chris
3 days ago
just found out that, and I must truly say, I envy my deceased partner, who does not live in this hell any more!!!! Here from https://agfundernews.com/br...
quote
""US farmers are now using Pivot Bio's microbe-based, nitrogen-fixing product in place of synthetic nitrogen on 5 million acres of corn."!!!!
CEO Co-founder Karsten Temme replaced Chris Abbott, with $100 million mark in FY2023!!!!!!!!!!!!!!!!!!!!!
0 0 Reply • Share ›

chris
3 days ago edited
Thank you so much for this extremely important information in particular the patent no! This is really TERRIFYING to read what is being done there!!! They use totally unnatural ingredients replacing amino acids with peptidomimetics which interacts totally different with light. Enterobacter or many of the species completely redesigned, they are talking about in patent, are species which are part of our human gut system too!! I just cant believe all this. Apparently all was tested ALREADY!
There is a talk about bacteria being part of a plant, implying the synthetic bacteria produce the nitrogen the plant needs and these synthetic bugs suppose to be GLUED to the plant!!!??
The changed metabolic ingredients include not only nitrogen, but in particular glutamine the human neurotransmitter! Everything in this patent is SO SURREAL that the one who came up with this all must be a SERIOUSLY SICK psychopath.
It is unbelievable that this was already tested on 1 acre field trial in San Luis Obispo in CA in June 2015!!! The design and execution of the crime was done by 'research organisation' Pacific Ag Research!!!
Whatever somes out of this SATANIC design is not a food for HUMANS.
0 0 Reply • Share ›

LinUK
3 days ago
Satan has no need to look for new lies, the first one that he told to Eve still works the best.
Genesis 3:4 "You will not certainly die," the serpent said to the woman. 5 "For God knows that when you eat from it your eyes will be opened, and **you will be like God**, knowing good

Donate Now
You make the difference.
GUIDESTAR PLATINUM SEAL OF TRANSPARENCY 2020

Latest News

DOD Whistleblower Goes Public, Calls for Investigation Into New COVID Vaccine Injury Data

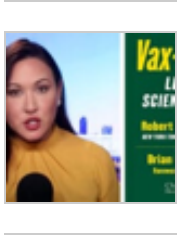
'Deeply Flawed' Report Praising Pandemic Mandates Used to Promote 'Lockdown Doctrine,' Critic Says

Genetically Modified Soil Microbes May Have 'Irreversible Consequences' — New Report

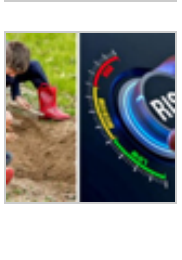
MORE NEWS

Latest Views

Could Pfizer Vaccine Weaken Kids' Immunity?



Watch: CHD's Brian Hooker Talks 'Vax-Unvax' With Kim Iversen



50 Years After One of Largest Lead-Poisoning Cases in U.S. History, Children Still at Risk

MORE VIEWS

Get FREE News & Updates!
First Name..
Last Name..
Email..
SIGN UP

Get Text Alerts
Sign up for breaking news from The Defender.
Currently only eligible for numbers in the U.S. and Canada.
1234567890
Phone
REQUIRED. Phone number must be in a standard 10-digit format: 1234567890 or 123-456-7890
CONTINUE

Children's Health Defense®

Children's Health Defense® is a 501(c)(3) non-profit organization. Our mission is to end childhood health epidemics by working aggressively to eliminate harmful exposures, hold those responsible accountable and establish safeguards to prevent future harm. We fight corruption, mass surveillance and censorship that put profits before people as well as advocate for worldwide rights to health freedom and bodily autonomy.

THE DEFENDER IS AVAILABLE IN:
ENGLISH SPANISH PORTUGUESE GERMAN ITALIAN FRENCH

TAKE ACTION
DONATE FREE SIGN-UP BECOME A MEMBER
Donations are tax deductible to the full extent of the law. EIN #26-0388604

Children's Health Defense • Legal Disclaimer • Terms of Use • Privacy Policy • Donate • Work for CHD • Contact • Social

© 2016 - 2023 Children's Health Defense® • All Rights Reserved • Sitemap